EIMERIA FOR THE CONTROL OF COCCIDIOSIS NOW A REALITY IN AUSTRALIA

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There are four species of Eimeria in Australia associated with infections of poultry. These are E. acervulina, E. maxima, E. tenella and E. necatrix. The latter two are associated with mortalities of up to 10% in some flocks. Wild challenges are unpredictable. Mortality increases and flock uniformity decreases with challenge during rearing while mortality with associated egg drops can occur during production.

To avoid the cost of feeding anticoccidials on a whole life program, the poultry industry encourages immunity to develop in parent birds. The onset of challenge can be manipulated with feed and water-supplemented anticoccidials. A different approach used in Australia to induce immunity early in the growing cycle is controlled exposure. Joyner (1973) showed it was possible to induce immunity to Eimeria by feeding low doses of pathogenic strains. By modifying the concepts of Joyner (1973) and using laboratory passaged strains of Eimeria the poultry industry has developed an exposure and critical time medication approach. Birds were challenged with four species of Eimeria and strategically medicated between 9 and 12 days post challenge. The medication is necessary to overcome the variable rate of uptake of the Eimeria administration and to protect the birds from the rapid build up of pathogenic organisms which occurs 6 to 8 days post administration. The drawbacks of the present approach are: (1) when medication is administered too early some species can be suppressed. This causes outbreaks some days after the medication has finished. (2) Mortality from the more pathogenic strains of Eimeria may occur if the medication is applied too late. The controlled approach has resulted in nil mortalities being achieved regularly with all species used.

Shirley et al. (1995) report similar problems with the use of field strains of Eimeria to induce immunity. The use of attenuated or precocious strains is recommended.

Jorgensen (1996) reported preparations of precocious strains of E. acervulina and E. maxima. E. tenella strains with lowered pathogenicity and selected strains of E. necatrix are now being assessed. (Jorgensen, Personal communication).

There are no commercially licensed stocks of Eimeria in Australia. A four-species preparation made under licence will be available to the commercial poultry industry in April 1997 in which the strains identified by Jorgensen will be included.

The work being reported will include selection criteria used to select the strains of Eimeria, a description of the specialised laboratory built to prepare the Eimeria cultures, analysis of liquid nitrogen storage and recovery of Eimeria, chicken inoculation testing using fractured oocysts for unwanted pathogens, seed stock preparation, seed stock storage and shelf life in final packaging.

